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The Capabilities That Medium-Armored Forces Bring to the Full Spectrum of Operations

Medium-armored forces are central to the U.S. Army's vision of the Future Force, expected to combine the agility of light infantry with the greater lethality and survivability of heavy units through the Future Combat Systems (FCS).¹ FCS is a networked family of systems designed to achieve information superiority on the battlefield. While the U.S. Army develops FCS, it is fielding Stryker brigade combat teams, medium-armored forces that give the current force increased capability.

Medium-armored units have been employed extensively in the 20th century, but today the U.S. Army has little resident experience with them across the full range of military operations. To provide additional insight and to help inform decisions about the Future Force, researchers at RAND Arroyo Center conducted a qualitative assessment of the performance of medium-armored forces in 13 past conflicts that span the range of military operations. Specifically, they conducted case studies of both U.S. and foreign militaries to understand the unique capabilities that medium-armored forces have brought to past conflicts, how they have performed in complex terrain, and what advantages the rapid-deployment capability of medium-armored forces has provided to operational commanders in the past.

¹ In this research brief, a medium-armored force is defined (1) in terms of platforms (e.g., tanks and other armored vehicles) and (2) relative to a nation's overall force and the opponent's armored vehicles. For example, even though the M4 Sherman main battle tank was the U.S. Army's heaviest tank (33 to 36.5 tons) for most of World War II, forces equipped with it were medium armored relative to German forces equipped with Panzers (44- to 69-ton tanks).

Key findings:

- Medium-armored forces can make critical contributions, especially when augmenting light forces or in cases where rapid response can preempt an effective enemy counter.
- While medium armor enjoys clear advantages over heavy armor in many situations, adversaries operating in complex terrain with heavy armor and/or highly lethal weaponry can negate these advantages.
- Future Army forces need to maintain an appropriate mix of heavy, medium-armored, and light forces tailored to the battlefield conditions that best match their attributes.

Medium-Armored Forces Can Be Disadvantaged Against Competent Heavy Forces

At the higher end of the range of operations (major operations and campaigns), the performance of medium-armored forces has been mixed. During the Spanish Civil War, Russian tanks had a clear advantage over more lightly armed German and Italian vehicles. In World War II, U.S. tanks and tank destroyers operated with an enormous lethality and survivability disadvantage against competent German forces equipped with tanks and antitank weapons. This was a contingency that U.S. Army doctrine had rejected, and which U.S. forces mitigated by overwhelming the Germans with sheer numbers and very effective artillery and air support. Absent a threat of tank-on-tank combat, medium armor was more effective in many situations than heavy armor would have been. For example, medium-armored vehicles generally were able

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U.S. Army medium-armored forces during World War II (left) and Operation Iraqi Freedom (right).



Photos courtesy of the U.S. Army Center of Military History.

to move more rapidly over the operational area and usually required less logistical support than heavy armor.

Medium-armored forces have been particularly valuable in crisis-response and limited-contingency operations. Even small numbers of medium-armored forces can make a critical difference, particularly in augmenting light forces or when operating independently in raids or strikes. In Somalia (1993), Malaysian and Pakistani armor provided the protected mobility and firepower required to extricate soldiers trapped in Mogadishu during a raid to capture a clan warlord. During Operation Just Cause in Panama (1989), air-dropped, medium-armored M551 Sheridan armored reconnaissance vehicles provided a critical capability to light forces. In Iraq (2003–2005), Stryker Brigade combat teams were able to provide rapid response across a large operational area, providing greater survivability than light forces. In each of these cases, medium-armored vehicles allowed forces to perform better than light forces alone by providing protected mobility, mobile firepower, and a rapid-reaction capability that foot soldiers or truck-borne infantry do not possess.

Medium-Armored Forces Have Performed Well over Complex Terrain, but Vulnerabilities Exist

In almost every case examined, medium-armored forces had to operate in some form of complex terrain (i.e., urban, jungle, mountainous, or some combination thereof). Furthermore, most of the operations were affected by the under-developed infrastructure that characterized the operational environments. The accompanying table identifies the types of terrain experienced by medium-armored forces during each of the 13 conflicts examined.

The RAND team's assessment shows that medium-armored vehicles were better than heavy tanks at operating with mobility in complex terrain and that the weapons on medium-armored vehicles were more readily adaptable to combat in mountains (Afghanistan, Chechnya) and urban areas (Chechnya) than those of heavy units. Medium-armored platforms also provided greater survivability to infantry than light vehicles did. Finally, medium-armored forces were better able to operate in areas with less-developed infrastructure. Nevertheless, complex terrain created survivability problems. For example, until very recently, armor has been thickest on the front end of most armored vehicles, in expectation of head-to-head, direct-fire engagements. In complex terrain, however, direct-fire attacks frequently occur at close range and are aimed at the more vulnerable sides, rear, or tops of vehicles. Additionally, the belly of most armored vehicles is thin and thus vulnerable to mines and improvised explosive devices, weapons that are easier to conceal in complex terrain.

Rapid-Deployment Capability of Medium-Armored Forces Has Been a Key Asset

The capacity to rapidly deploy medium-armored forces may be an important national capability. In the strike and counterinsurgency operations conducted by the Soviet Union in Czechoslovakia and Afghanistan (1968 and 1979–1988, respectively), the Soviets chose medium-armored forces, preferring their greater deployability compared with heavy forces and their greater mobility and firepower compared with light forces. In Panama, air-dropped M551 Sheridan armored reconnaissance vehicles provided an important capability

Complex Terrain Experienced by Medium-Armored Forces in 13 Past Conflicts

Case	Complex Terrain					
	Urban	Mountainous	Jungle	Forests	Hedgerows	Undeveloped infrastructure
Armored warfare in the Spanish Civil War (1936–1939)	X	X				
U.S. armored divisions in France and Germany during World War II (1944–1945)	X	X		X	X	
Armored cavalry and mechanized infantry in Vietnam (1965–1972)		X	X			X
Soviet airborne operations in Prague, Czechoslovakia (1968)	X					
South Africa in Angola (1975–1988)				X		X
Soviet Union in Afghanistan (1979–1989)		X				X
Operation Just Cause, Panama (1989)	X					
1st Marine Division light armored infantry in Operation Desert Shield and Operation Desert Storm, Southwest Asia (1990–1991)						X
Task Force Ranger in Mogadishu, Somalia (1993)	X					X
Russia in Chechnya I (1994–1996)	X	X				X
Australia and New Zealand in East Timor (1999–2000)			X			X
Russia in Chechnya II (1999–2001)	X	X				X
Stryker Brigade Combat Teams in Operation Iraqi Freedom (2003–2005)	X					X

to U.S. light forces, although they were matched against an already vastly outclassed enemy.

It is important to note that the U.S. Army currently lacks a forced-entry, air-droppable medium armor capability. The Sheridan employed in Panama has been retired from the inventory, and Stryker medium-armored vehicles are not air-droppable. In addition, with their add-on armor, Stryker medium-armored vehicles can be deployed only by C-17 or C-5 transport aircraft, limiting their movement by air to only secure locations.

Key Insights and Recommendations

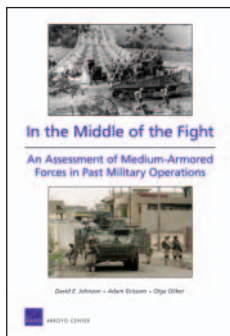
These case histories yielded three major insights.

First, medium-armored forces fare poorly against competent, heavily armored opponents. This finding will be an important consideration if plans to enhance the survivability and lethality of medium-armored forces do not live up to

expectations or cannot be fully realized in battlefield conditions.

Second, doctrinal and organizational steps can, in certain circumstances, mitigate medium armor's liabilities. These steps include the implementation of high-quality combined-arms tactics down to the lowest echelons, the effective application of supporting firepower, and training for crews and junior leaders.

Finally, the U.S. Army has lacked a forced-entry armor capability since the retirement of the M551 Sheridan. Neither the Stryker vehicle nor the Future Combat Systems (as currently envisioned) can fill that critical void. The researchers conclude that it would be prudent for the U.S. Army to maintain a mix of heavy, medium-armored, and light forces that can be task organized and employed in conditions that best match their attributes. Medium-armored forces have much to offer in such a mix. ■



This research brief describes work done for RAND Arroyo Center and documented in *In the Middle of the Fight: An Assessment of Medium-Armored Forces in Past Military Operations*, by David E. Johnson, Adam Grissom, and Olga Oliner, MG-709-A (available at <http://www.rand.org/pubs/monographs/MG709/>), 2008, 336 pp., \$36.50, ISBN: 978-0-8330-4413-6. This research brief was written by Susan Woodward. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. **RAND®** is a registered trademark.

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